Birmingham District Energy Scheme

Case Study – June 2015

Birmingham District Energy Company

Introduction

- COFELY
- Birmingham District Energy Scheme
- Procurement Timeline
- Benefits to End Users

Cofely UK

- Leading provider of integrated services
- Specialising in energy, technical, FM & business process solutions for the built environment
- UK leader in District Energy

- **£2.5bn** revenue stream over the concessions
- **77,000 tonnes** CO_2 saved per annum
- **270 GWh** energy sales per annum

Manchester
MediaCity UK

London
Olympic Park & Stratford City
Whitehall
Bloomsbury Heat & Power
Greenwich Millennium Village
Equinox, Hatfield
ExCeL District Energy

Midlands
Leicester District Energy
Birmingham District Energy
Coventry District Energy
Berryfields Estate

South Coast
Southampton Geothermal
Eastleigh

Cofely by Numbers

- **No. 1** – GDF Suez is world's largest multi-utility (Forbes Top 2000)
- **Europe's leaders** in energy and environment efficiency services
- **€90.7 billion** turnover
- **€11 billion** gross investment (2012);
- **217,550** employees throughout the world
  - 60,700 in electricity and gas
  - 77,350 in energy services
  - 79,500 in environmental services
- **118 GW** of installed capacity (12 GW under construction);
- **1,100** researchers and experts in **9** R&D centers
- Operational presence in almost **70** countries
- **6** business lines – Cofely is the Energy Services division

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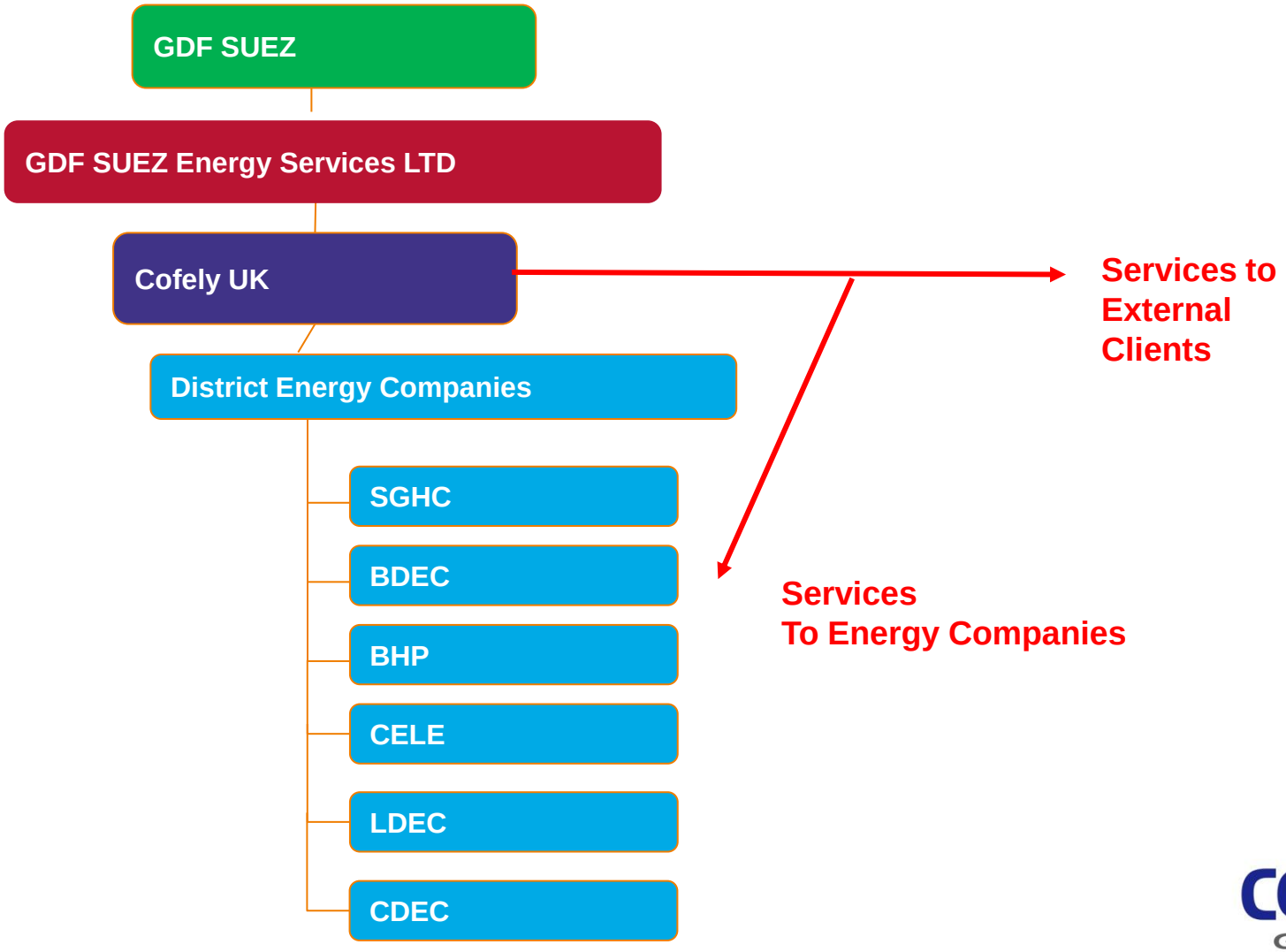
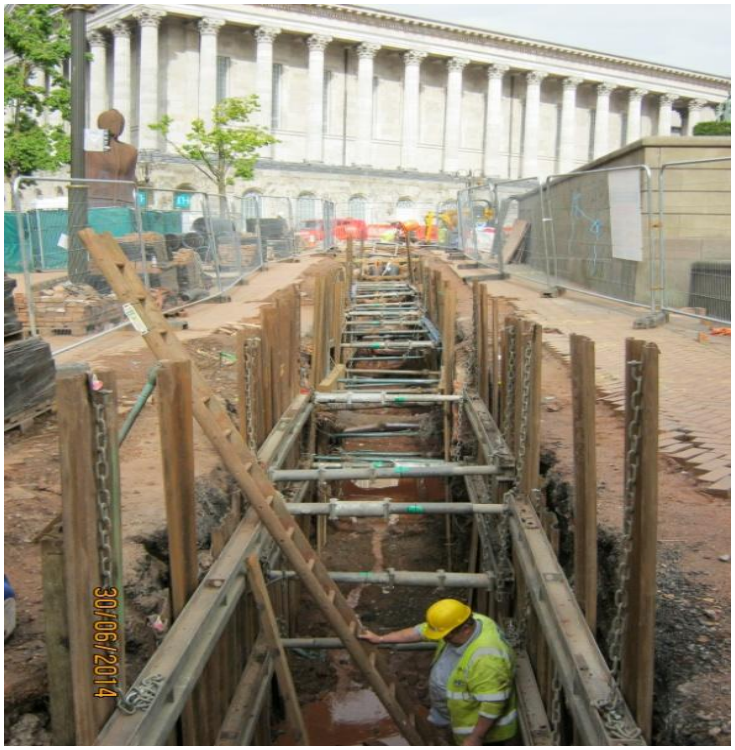
Birmingham District Energy Company (BDEC)



Birmingham District Energy Scheme

- 3 Separate District Energy Networks
- 6 x Energy Centres (Barclaycard Arena, ICC, LoB, BNSS, Aston and BCH)
- 56 MW heating (10MWe gas engine CHP & 48 MW boilers)
- 12 MW cooling
- 4 km heating and chilled water networks
- New Street Station and interconnection works underway



City Wide DH Scheme

15,600t CO_2 saving p.a.

3 Core Partners

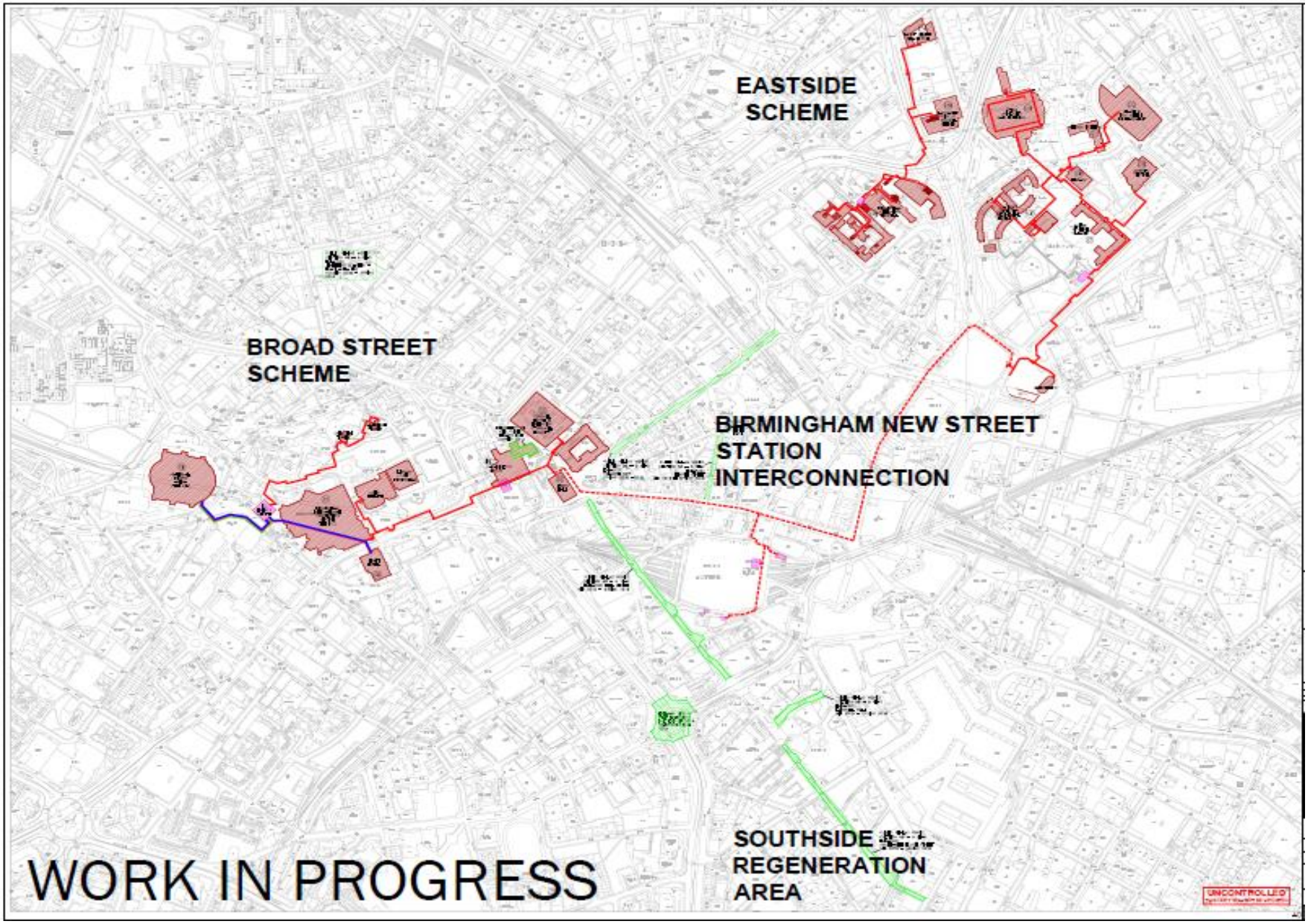
25 year Concession

Tri-generation

All operating at 95oC

Supporting BCC in achieving target of 60% CO_2 reduction by 2027

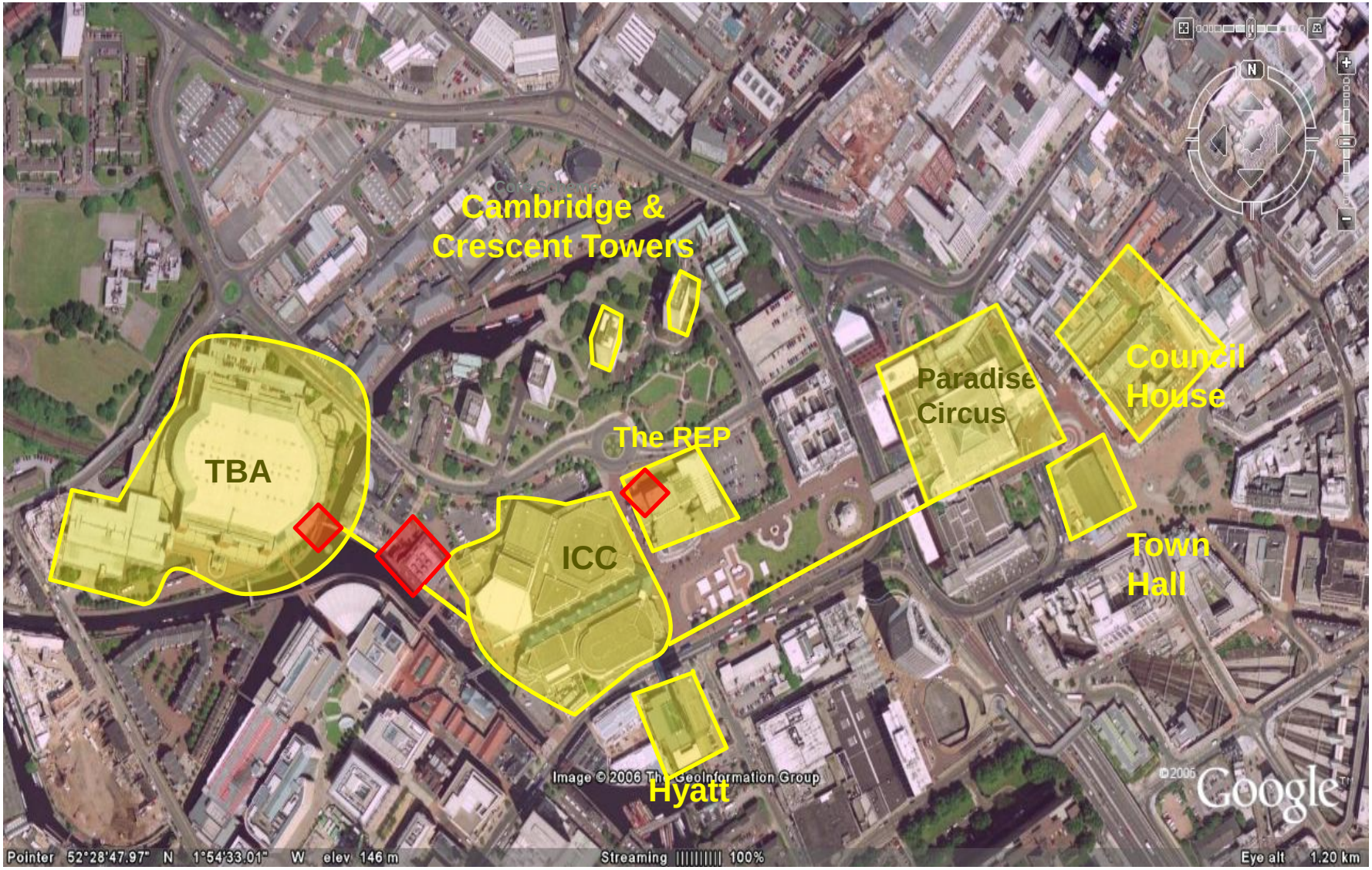
BDEC Network Overview



The Broad Street Scheme

- International Convention Centre
- Barclaycard Arena
- Town Hall
- Council House
- Library of Birmingham
- Hyatt Hotel

Broad Street Scheme
Customers & Network



Broadstreet Scheme

- Commenced in 2006
- CHP Capacity 3.6 MWe
- Boiler Capacity 11.8 MW
- Total Heat Consumption of 20.3 GWh
- Tri-gen supply to The Barclaycard Arena, ICC & The Hyatt Hotel
- Scheme efficiency 81%

Birmingham New Street Station

- Heat-on date scheduled for 2015
- Integrated into City Centre DH scheme
- 1.6MWe CHP
- £4m Cofely investment
- 1.5km of pipework extension
- 3,000 tonnes of further CO2 saving

The Interconnection

Interconnection Installation Works

Eastside Scheme (Aston University)

- Commenced in 2009
- CHP Capacity 3.5 MWe
- Boiler Capacity 14.3 MW
- Total Heat Consumption 20 GWh
- Masshouse – New Connection
- Scheme efficiency 75%

Birmingham Childrens Hospital

- Commenced in 2010
- CHP Capacity 1.6 MWe
- Boiler Capacity 9 MW
- Total Heat Consumption 16 GWh
- Bagot Street (656 residential) – New Connection
- Scheme efficiency 75%

BDEC Summary

- Large commercially developed CHP/district energy scheme
- Commenced 2006
- 3 Initial Schemes: City Centre, Aston University & Birmingham Children's Hospital
- Supplying heating, cooling and electricity
- 15,600 tonnes of CO2 saved p.a.
- >10MWe of CHP
- Project built on 25 year energy supply contracts
- Capital cost to date £7m

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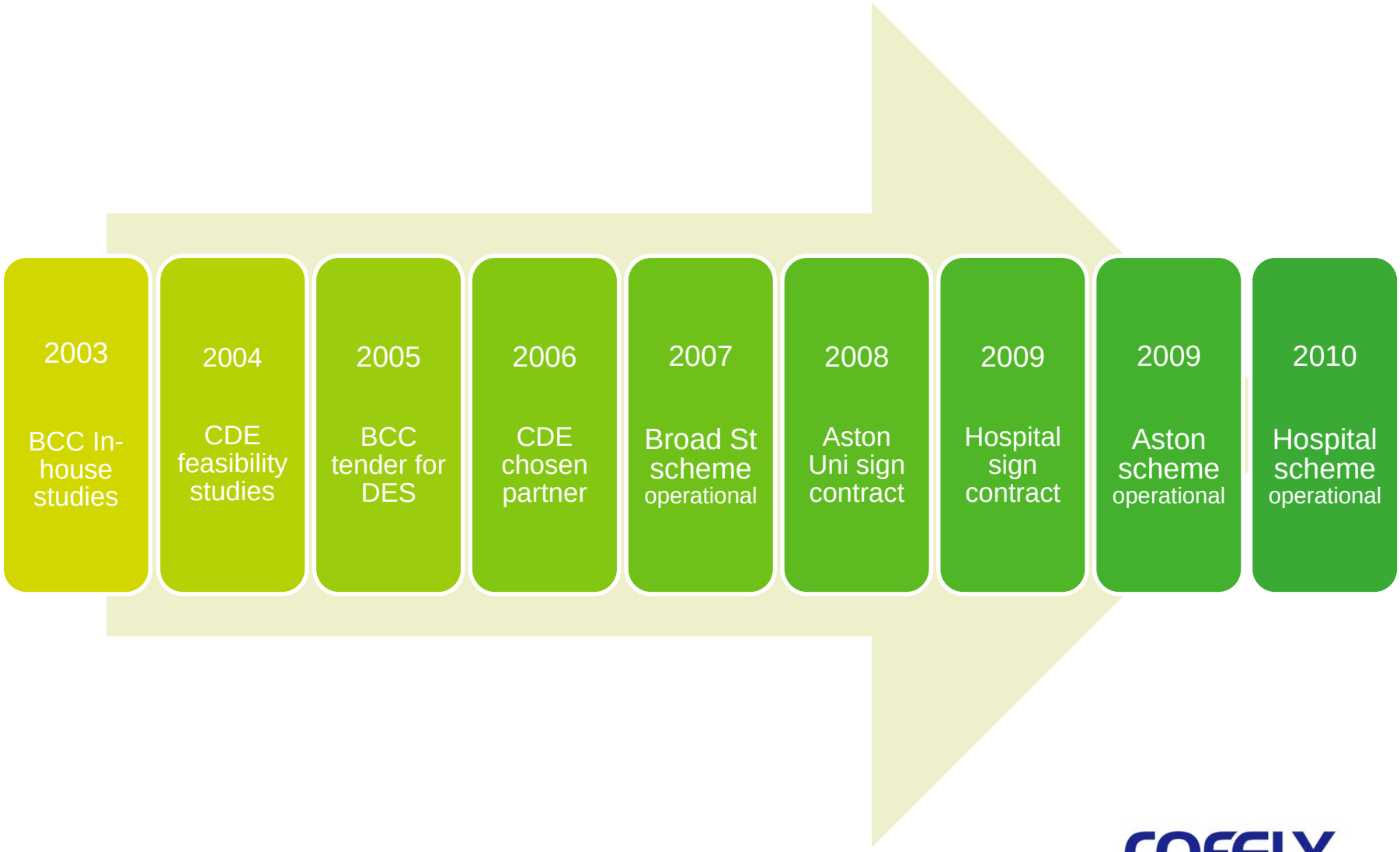
Timeline - Conception to Completion



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Summary

- Undertake Feasibility Study to Identify Potential Schemes
- Appoint Champions
- Obtains Support from Council and Other Stakeholders
- Prepare and Issue Tender
- Appoint Partner and Sign Contract
- Assist Implementation
- Assist Expansion & Development

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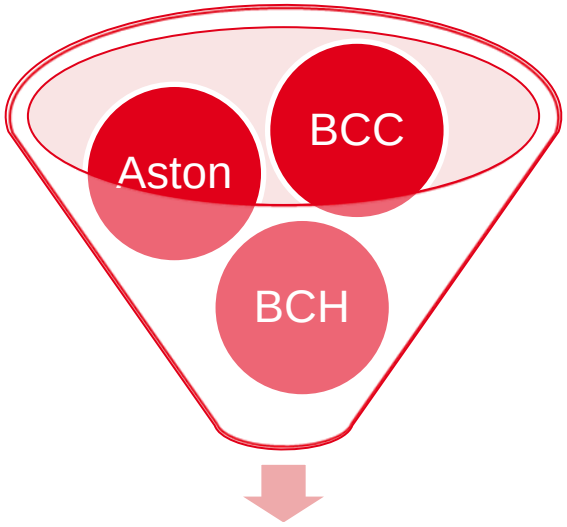
Key Lessons Learnt

- Champions within the Council are essential
- Government support and financial backing
- Council support during the implementation stage
- Ongoing collaboration between the ESCO and the Council
- Establishing a good communications and marketing strategy
- A framework agreement between the ESCO and LA Partner which works for both parties
- Good relationship with core partners



Birmingham District Energy Scheme

Benefits to End Users

- **Capital cost savings**
  - connection charge discounted on conventional plant costs
- **Whole-life cost savings**
  - Saving compared to alternative cost of heating/cooling
- **Pricing Security**
  - prices index linked to market prices to ensure savings are maintained
- **Carbon Savings**
  - Typically 30% – 50% saving
- **Risk Transfer**
  - no mechanical plant, flues, gas etc. required on site
- **Space savings**
  - Significantly smaller plant space required compared with conventional boiler house and more flexible in terms of location
- **Security of supply**
  - Availability level of 99.9%

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